Renewable and Sustainable Energy Reviews 13 (2009) 2061–2069

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

Red Eléctrica de España S.A.: Instrument of regulation and liberalization of the Spanish electricity market (1944–2004)

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ARTICLE INFO

Article history:
Received 17 November 2008
Accepted 19 January 2009

Keywords:
Energy policy
Network utilities
Europe
Regulation
Restructuring
Common carrier
Business history
Red Eléctrica de España

ABSTRACT

To understand the regulation system of the Spanish electricity market it is first necessary to understand on the one hand the system of tariffs and prices, and on the other the organization of the market for high voltage distribution. This article is concerned with this second aspect and traces its history from 1944, this is because before that date it was not possible to speak of a truly national market, but rather only of regional monopolies. In the 1940s, with Franco's new political regime, and the development of the Spanish electricity sector, it became necessary to completely rethink business strategies in relation to competition and cooperation, as well as the regulatory function of the state. In the 1950s, the main feature of the sector was the system of business self-regulation permitted by the state. Throughout the remaining years of Franco's government state intervention was particularly focussed on the subject of tariffs, but with the onset of democracy the state was to involve itself in the transmission network as well. A debate began as to whether it should be run by a private or public operator. In this dispute were ranged, on the one hand, the economic policy concepts of the major parties (PSOE and PP), and against them the strategic interests of the companies. Although the high voltage transmission network was nationalized by the state in the mid-1980s, establishing a 'traditional' model of regulation, the 1990s saw the triumph of a market-based regulation, strongly influenced by the dominant ideas in the European Union, which has converted Red Eléctrica into a private company. Currently the TSO (Transmission System Operators) model has been extended to Portugal and has entered into competition–cooperation with the other models of the European electricity market.

Contents

1. Introduction[1]

Every regulation and de-regulation in the electricity market acts on four components or businesses: generating, transmission, distribution and commercialization. The general tendency throughout time, in regulations as well as de-regulation, is to disintegrate vertically these components of each company and aggregate them into a managing or a new specialized company. In

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[1] The first version of the present work can be found in Garrués and López [3]. Our sources have been the following: Actas del Consejo de Administración de Red Eléctrica de España (CAREE), 1985–2004, Madrid, REE; Actas de la Comisión Ejecutiva de Hidroeléctrica Española, 1973–1991, Madrid, Archivo de Iberdrola; Memoria de Aseléctrica (1980–1985), Madrid, REE; Memoria de Red Eléctrica de España (1986–2005), Madrid, REE; Red Electrica de España. Annual Reports, Madrid, REE, 1985–2009.

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doi:10.1016/j.rser.2009.01.028

these processes, the segregation of transmission activity is the key element. The present communication explains this process in Spain.

After the Second World War, the regulator was maintained captive by the cartel of production companies. The cartel had the name of UNESA. The cartel self-regulated transmission activity until the return of democracy in the second half of the 1970s. The democratic state had to regulate to go from self-regulation to deregulation.

The main player in this process would end up being a public company, Red Eléctrica de España S.A. (REE), created in 1985. The model that was finally decided on was of particular characteristics, only similar to the British case in the 1930s. This work explains how the political and institutional contexts determined the business model and the technology applied to the management of the network. In this sense, we can highlight two moments:

(a) The first one happened in the 1980s. It is the transition from self-regulation, characteristic of the period of Franco's dictatorship, to regulation, in which the social-democratic Government established a model based on the concept of public service and the development of a public company as manager.
(b) The second one was at the end of the 1990s. There was a deregulation in the European frame. The successive governments, to a greater or lesser extent, gave priority to the liberating tendencies of the market (privatization, diversification and internationalization). On the other hand REE was privatized, although it was still a company that depended on the Government's decisions.

2. From the dominance of the cartel to confrontation with the state (1944–1985)

From 1944 the cartel of generation and distribution companies, under the name of UNESA, self-regulated the transmission of high voltage electrical energy. Initially, the system was scarcely interconnected, therefore there were only regional markets. In 1953, with the increasing density of regional networks and multiple contacts, the cartel decided to create a central control called Repartidor Central de Cargas (RECA). It is a very simple technological system. From an office they could switch on and off the incoming energy according to the information gathered telephonically, but respecting the agreements they had reached at the cartel's meetings. In 1968, this system was institutionalized with a ministerial order.[2] This situation changed with the onset of democracy.

In 1977, in the Pactos de la Moncloa (essential political agreements of the Spanish political transition in which leftwing parties and unions changed social peace for economic equality) they came to the agreement that the state must take back the control of the electricity market. The leftwing parties understood that the system should be nationalized, while the centre-rightwing government did not feel strong enough to eliminate the cartel. In 1979 they came to a compromise solution. The Spanish Parliament created the Asociación Aseléctrica. Aseléctrica was like an enlarged cartel, a forum in which the state discussed with UNESA the criteria for organizing the electricity market. By sharing the decisions the cartel avoided nationalization. Management of the central control (the RECA) went to Aseléctrica. The state fixed operating criteria and could veto decisions taken by companies.[3]

The central control system designed by the cartel had been created more to preserve the interests of the companies than to achieve an optimization of the network. Then, with the state coming into management, the optimization of the network came first and the technology of the central control (RECA) was revealed insufficient. The new characteristics that the central control ought to have were decided in 1980. The name RECA was changed to CECOEL (Centro de Control Eléctrico); and at the end of October they were studying the new needs of the technical equipment based in computers and their peripherics.[4] While it was being installed, the CECOEL was busy coordinating management with close collaboration with electricity companies. The CECOEL had to manage the energy interchanges in the national market, taking two factors into account: first, the contribution to the grid of generation plants and the transmission of energy of thermal origin depending on the state of the hydroelectric year, and secondly exchanges of energy with France and Portugal.

The model became known as shared regulation. Consequently the Government Delegate held weekly meetings with the cartel in which the operational rules of the Ministry of Industry and Energy were communicated. However their decision-making was limited while they had no central control based on up to the moment information, more accurate than that which the companies possessed. At that time the state was reduced to the ratification of what the electricity companies had already carried out. It was in this situation that the Socialist Party government was elected. Their Policies were inspired by the UGT trade union, they were committed to strong regulation and the nationalization of transport activities. In 1983 the new government signed a protocol with the companies in which the nationalization of the High Voltage Grid was established. It was also established that the management of the grid would be the responsibility of a state company, with the participation of the private sector, which would own the property and would replace Aseléctrica. To provide detail to this agreement the Ministry of Industry and the electricity companies set up a Working Commission to decide which assets should be transferred from private hands to the new company and the shareholdings they should possess in the future company.[5]

State intervention in high voltage transmission was nothing new. In fact it could be said that it was a modern version of the English Central Electricity Board (CEB).[6] This independent state organization was an institutional innovation devised by the British government to promote efficiency in its electricity sector in the 1930s (1927–1942). The CEB coordinated the distribution of electricity at high voltage without having to resort to the nationalization of the whole sector while maintaining the incentives of the private companies. It was seen to be a powerful instrument for modernizing the sector and removing the old oligopolistic interests.[7] After the Second World War the trend was towards nationalization throughout Europe, beginning with France, Britain itself and Italy.

However, some authors have defined the actions of the Socialist Party government in Spain as an 'undercover nationalization' of the long-term decisions whose main influences could be in the system of French or Italian state monopoly. What is certain is that the new model of regulation established in Spain brought about a first phase of vertical disintegration in the old regional private monopolies and created the means to achieve an optimization

[2] FEMUGT [4, p. 45].

[3] Garrués [5, pp. 623–625], RD 926/1980 and FEMUGT [4, p. 48].

[4] The contract for adjudication of the equipment of CECOEL with Control Data Corporation was signed in October, after visiting different foreign *electrical dispatching*. The funding of the new management system (12,497,086$), which had a period of completion of two and a half years, was carried out thanks to two loans given by Eximbank and Bank of America.

[5] FEMUGT [4, p. 67 y ss].

[6] As the Weir Committee admitted: "We propose not a change in ownership, but the partial subordination of vested interests in generation to that of a new authority for the benefit of all, and this only under proper safeguards, and in a manner which will preserve the value of the incentive of private enterprise". Cited by Hannah [6, p. 210].

[7] Millward [7, pp. 111–145].

of the Spanish electricity system from a central office with wide powers over the generation and distribution in detriment to the liberty of action of the companies.

The state continued to regulate the sector giving greater powers to the Government Delegate in Aseléctrica (RD 379/1983), setting out the creation of Regional offices for operations (L 49/1984)[8] and, above all, forcing the nationalization of the High Voltage Grid. The cartel defended itself explaining that they had fulfilled the task of supplying all the Spanish market in an efficient way and that the new company which had been created was based on models that they had created.[9]

Before the new company was constituted, Aseléctrica[10] continued with traditional working system, but the state with the putting into operation of the Spanish Peninsular Shared Regulation in March emphasized their insistence on what would later be the strategic shape of the new company: (a) coordinating that the international energy exchanges did not hinder the integration of hydraulic, nuclear and, above all, thermal surpluses; (b) studying the regulation of nuclear power stations; (c) controlling more effectively seasonal factors and interruptions to the service; and (d) long-term analysis of the planning of the transmission grid.

At the end of 1983 the computerised system installed in CECOEL was successfully tested (hardware by Control Data and software by CDI and the Spanish company Sainco). The state now possessed the technological means capable of exercising up to the minute control over the electricity system.[11]

Finally the companies accepted the disappearance of Aseléctrica as a lesser evil. They lost control of the coordinated operation of the generating system and high voltage transmission, but they had reduced the level of nationalization to the establishment of one single public company, the future REE, for the management of the High Voltage Grid (see footnote 11). The cartel had finally lost its main common asset (the control centre). From that moment it attempted to protect the control centres of each company, which had given their regional nature, could still block the aims of central government.

The cartel's strategy, implemented through UNESA, was to strictly follow the conditions set out in the 1983 Protocol[12]. During the trial period of the REE the companies wanted to be solely responsible for carrying out the instructions of the ministry over the operation of the High Voltage Grid, and to cede only those parts of the grid which were necessary and had been expropriated by the state. However, the electricity companies had no option but to submit themselves to the wishes of the regulator, even when they went beyond the agreements reached in the protocol. Their opposition to the loss of their autonomy which was brought about under the electricity system's new operational system is hardly surprising.[13]

The cartel had maintained the independence of each company under the management system of Aseléctrica and the RECA, by using bilateral energy exchange contracts which functioned in the medium term. But now they were going to face a future where the energy market was going to be opened up, constant (in real time) and regulated by a basically public organism. Under these conditions they would have to increase their level of efficiency to be able to place their surpluses at the most appropriate times. Their level of control was diminishing, they only retained any because of the existence of the regional electricity monopolies. In 1984 they evaluated the law that unified the operation of the national electricity system (L 49/1984), which was being managed by the REE, still in its trial period, as "an absolute decline in the individuality of operations of the Companies".[14]

The cartel's opposition led to a lessening of the degree of control. UNESA reached an agreement with the state by which the companies would coordinate operations weekly, through UNESA and, later REE would in turn make the appropriate corrections.[15] On the other hand they condemned the Strategic Plan for the Electricity Network to the Ministry of Industry. According to the chairman of the cartel, Oriol, the electricity network should concern itself with ensuring the optimization, but not the direct running of the private generating facilities of the companies, "because the opposite would in fact be a real nationalization of its management".[16] The battle lines were drawn.

3. The cartel cornered (1985–1991)

On 29 January 1985, in fulfilment of Law 49/1984 and Royal Decree 91/1985, the Red Eléctrica de España S.A. was established, as the management company of the public service for the unified operation of the Spanish electricity system. The new Company took on the assets, the rights and the obligations of the dissolved Aseléctrica, and continued the guidelines which had been fixed in the 1983 Protocol.

The Socialist Party government opted to nationalize part of the electricity system and maintain its structure of a private company, partly "because it could be done without paying a peseta (the owners were compensated with shares in the newly established company itself)".[17] As a result the new company started life being able to count on the majority of assets of the High Voltage Grid.

The company found itself with a noticeable lack of personnel to direct transmission and the maintenance of installations. At first it had to resort to the subcontracting of specific functions to the electricity companies themselves, and shortly after, with the aim of making best use of the experience gained and minimizing the costs to the sector, contracting directly the personnel of the cartel's companies. Eventually they managed to put the new programming system (weekly and daily) into operation on 1 July 1985, but because they had not reached any agreement with the electricity companies over the technical regulation of operations they temporarily worked with provisional rules.

The confrontation continued, but on 19 January 1986 the system for control in real time for supervising the peninsular electricity system went into operation, the CECOEL was up and running. The

[8] Real Decreto 379/1983, February 23, Presidencia del Gobierno. Modified the Real Decreto 18-4-1980, about the responsibilities of the Asociación de Empresas for the Electricity System Operation and the creation in it of a Delegación del Gobierno. Ley 49/1984, December 26, Jefatura del Estado, unified Operation of the national electricity system.

[9] About the historical development of the Spanish electricity network, see Torá [8]. In relation to the working of the electricity system through Aselectrica, see Magaña [9]. To know about the working of transmission and distribution prior to 1983, see 1983, see Aranceta [10].

[10] The new Delegación del Gobierno in Aseléctrica was included in the RD 1597/1983, June 1. Actas de la Comisión Ejecutiva de Hidroeléctrica Española (from now on referred to as ACEHE), 25-5-1983, p. 3.

[11] Two documents developed the Protocol in 1983: 'Development of the Agreement Protocol between the Government and the Electricity Companies' and 'Constitution and Development of the Mixed Company Bases'. To have a clear idea of the objectives that the regulator sought with the establishing of the public business about the operating of the electricity system, see Fabra and Bartolomé [11].

[12] See previous note.

[13] To understand the new organization for operation of the electricity system, see Beato [12].

[14] ACEHE, 28-3-1984, p. 10. In fact, the chairman of Hidrola asked for 1-year postponement for the creation of the public company. ACEHE, 23-1-1985. See the coinciding opinion of Martínez López-Muñiz [13, pp. 341–352].

[15] Apart from this, the new compensations system (Orden 30/7/1984) set out by the Administration was intended to guide by a criteria of "absolutely nationalizing", given that starting from a theoretical tariff—the average price, it was intended to operate to a greater or lesser degree depending on the composition of the different companies. ACEHE, 29-2-1984, p. 2.n relation to the system of earnings (compensations) of the companies, see Documento [14, p. 156] and Maestre [15, pp. 41–44].

[16] ACEHE, 15-1-1986, p. 6.

[17] Ariño and López de Castro [16, p. 153].

state could finally count on computer equipment that would allow it to monitor the daily programming, paying attention to the changes in demand, and also to hydroelectric generation, company by company, and thermal generation by areas. Part way through the year the CECOEL became interconnected with the electrical dispatching of the electricity companies. The joint operation improved the programming of hydroelectric and thermal generation. The more efficient regulation of power reserves and international exchanges made it possible to minimize variable costs and make the system more flexible in relation to unforeseen circumstances. From September the introduction of Regional Operations Centres (CEREX) displaced the offices of the electricity companies, and with this the state took full control of the network. The power of the cartel had decreased.

However, the REE did not exercise completely the functions which legally corresponded to it.[18] For the badly done by cartel the CEREX were like having operating control by the state in their very own house, to such an extent that they forced the state to limit the CEREX to a merely informative function.[19] The conflict over areas of responsibility was resolved by a dividing up of responsibilities between UNESA and REE by way of "a gentlemen's agreement which without being signed still has the same worth" (the underlining is the author's emphasis).[20] The cartel (UNESA) would carry out the unified operating in agreement with the companies, while the REE would concern itself with overall optimization of the system. The agreement was based on the mutual exchange of information and joint control of decision-making and the system of inter-company compensations. The exchange of information consisted in each company sending their plan for the optimum coverage of their market to the REE for each time period: week, day, hour; according to the minimization of costs, and the REE modifying it in relation to the global optimization. The game of chess was not over yet; the cartel had castled. A period of debilitation started. The state took control of the network through the REE progressively, fighting to control each regional center and substation.

The putting into operation of the energy control systems of CEREX in the key centres of demand (Barcelona, Bilbao, Coruña, Madrid and Sevilla) allowed the REE to have the information direct from the network and the capacity to command the installations to carry out operation in accordance with its plans. This process lasted from 1986 to 1993. The crucial act came at the beginning of 1991 when the Central and Southern CEREX became responsible for the control and discharges in various substations, by way of the installation of digital control systems. In the second half of the year the Eastern and Southern CEREX were included into the voltage control of the network, coordinating the generation and the reactive energy with the object of minimizing losses to the network and maintaining adequate safety and quality. As a result, during the early 1990s the peripheral organization was strengthened, and from the technological point of view, so was the progressive introduction of automated systems which would allow automatic management of the network. The improvement of systems for programming, operation, and monitoring of operations obviously required establishing agreements, not without tensions and breaches, with the electricity companies while the control of the REE over the network was still growing.

4. Defeat of the cartel and confrontation with Europe (1992–1994)

Although in Spain the government had managed to substantially weakened the power of the cartel, however, from the end of 1990 the European legislation favoured a legislative atmosphere inclined towards the recovery of power by the companies in relation to the state. According with the Directives 90/377 and 90/547 of the CEE relative to the transparency of prices and the transit of electricity on large grids,[21] the Spanish government declared itself to be against the traditional version of the model of regulation (based on the assumption that each business –vertically integrated, took responsability for covering their market base solely through their own supply) and supported a more open interpretation with a public regulator for transmission, exactly as was the case of the REE. On the other side, within the cartel, two of the larger companies, Hidrola and Iberduero, merged in 1991 forming Iberdrola and anticipating a future in which the size of businesses should be competitive in a European Single Market. Besides, a greater capacity for negotiation with a state that could regulate generation and distribution was necessary, given that they could count on the success in the regulation of transmission and a public generating company which was Endesa. The discipline of the transmission cartel (through UNESA) disappeared and gave way to great business powers concerned to protect their independence in generation and distribution to consumers.

In the early months of 1992 the commission presented a proposal for a directive which did not progress because of opposition from certain countries to free access to third parties. This lack of definition made it possible for the commission itself in the same year, faced with the consolidation of the Spanish model of transmission, to recognise its successes and to put REE in charge of various studies of the functioning of important transmission grids outside the European Community (The Russian Federation and Maghreb) and inside it (The Spirit Programme). On the other hand the commission's projected directive named "Common Rules for the Internal market in electricity" shared with the Spanish model the principle of regulating the market basing itself on the Transport System Operators (TSO). For its part the Spanish government strengthened its position in favour of the TSO including it in its Bill for a Regulation of the Electricity System Law.

The Socialist Party government was a long way from those objectives which it had set out at the beginning of the 1980s. But, on the other hand, it had developed a very relevant regulation of transmission and had managed to make the charges satisfactory to the consumers. To achieve these successes it had based itself in the management of the public companies Endesa (generation) and REE (control of transmission). A gradual 'democratization' of energy policies had eliminated the prominence exercised by the electricity companies in prices from the 1950s. Moreover, by the 1980s the Electricity companies had been financially weakened. They could neither invest nor dominate the economic scene because they were heavily indebted due to the scrapping of the nuclear programme, the ceding of assets to the REE and the low rate of growth in consumption. However Europe once again defended a model which did not help the Spanish Government much in its control of the cartel. In 1993 the Community authorities decided that, in order to achieve an interior single market in the energy sector, the path should be to open the market to competition between companies to achieve the efficient allocation of resources, to obtain the subsequent reduction in energy costs and to ensure a quality supply. This vision took much from the British experience and

[18] Beato [2] and Zorrozúa & Álvarez [1].

[19] Relative to the implications of the appearance of Red Eléctrica on business management, see: Martínez López-Muñiz [13, pp. 331–340].

[20] ACEHE, 9-4-1986, p. 9.

[21] Alvarez Pelegry [17, p. 298] indicated that the commissioner Cardoso in the UNIPEDE Conference in 1991 clearly expressed the political will of the European Community to achieve an internal energy market, although "the issue which concerns the Commission is not whether to do it, but how to do it". The basic principles for the creation of an internal market in electricity were: (a) opening up generation to competition; (b) independent management of the transmission grid; and (c) the separation for accounting purposes of the different activities and access to the grid for third parties.

clashed with the actual model of regulation in Spain, based on centralized planning, unified operation (REE) and one scale of charges according to standard costs (MLE). The Spanish government understood that the option that was emerging from the new directives lead towards control by the companies, or the recently controlled cartel. The cartel had found an unexpected ally. Once again the difficulties that Brussels faced in integrating the great variety of different models of management and regulations in force in Europe gave the Spanish government the time and room for movement necessary to adapt its electricity model. It was necessary to consolidate the model and make the power of the cartel disappear completely before Europe presented its possible model inspired by the British model. To achieve this, the government made the REE an essential part of the national system of distribution and put it in charge of functional organization of the international exchanges. Once they had won the battle over organization of high voltage transmission at the national level it was time to 'regulate' both generation and redistribution at lower voltages to consumers. The government wished to force the concentration of generation into three companies each with an equivalent mix of generation, which would facilitate the establishment of more transparent charges (standard costs) adjusted to reality.[22] The Government's proposal for the creation of a sector with a horizontal structure would also make it possible to consolidate the hegemonic position of Endesa which, by way of certain amalgamations, in particular in Catalunya (*FECSA*) and Andalusia (*Sevillana*)[23] was able to enter into the business of distribution to consumers.

In June 1993 the cartel went through its worst moments. Iberdrola and Endesa declared a pact for stability in the sector (the adjustment of the MLE, interchange of assets, and resolving the nuclear debt) supported by the Administration. The practical liquidation of the cartel gave the government the calm necessary to adapt the regulation to new times in the midst of obvious lack of definition and lack of power on the part of the European authorities.

5. Towards a more competitive model (1994–1996)

The law for the Regulation of the National Electricity system (L 40/1994) (LOSEN) in theory set out a scheme which showed more flexibility towards opening up to competition apparently in agreement with the European Directives. However, one integrated system subject to traditional regulation coexisted with another independent one which was growing gradually in which the authorised generators and consumers could bilaterally contract with complete liberty. Now that the cartel had almost disappeared and the two main generation companies (the private Iberdrola and the public Endesa) were under control the liberalising process could now start. The LOSEN, in as far as it recognized electricity transmission as one specific activity which was independent from generation and distribution, placed the REE in charge of activities related with the joint operation and the transmission, with adequate separation of accounting, and also the operations of international exchanges of electricity in the short and long term. On the other hand it demanded the restructuring of its shareholding before the end of 1997, with the intention that no private shareholder should be able to gain a position of control directly or indirectly (the total could be no greater than 30%).[24] Even so, one of the main innovations of the LOSEN was the economic integration of the system, centralized liquidation, which institutionalized the concept of system as a unit: a wholesale pool of all energy, as opposed to an energy market. In this way the traditional model of regulation (binding planning, joint operation, and economic regulation) was maintained, even though the creation of the National Electric System Commission (CSEN) as an independent regulating entity relegated the REE to the mere management (operations) of the public service.[25] The transmission of energy was, as a result, firmly differentiated as an activity distinct from generation and distribution with as system of remuneration (transparent and objective) comparable to other activities in the electricity sector.[26] To this end the REE managed to guarantee the permanent functioning of CECOEL in 1994, calculating in real time the demand of each electricity company and constituting a fibre optic telecommunications network for the running and management of the Company.[27]

One year later, after 10 years in business, the REE had managed to achieve, according to Fabra, the project which justified its setting up: "making the high voltage transmission of electricity into an independent business activity, capable of creating its own culture, its own interests, so equipping the Spanish Electricity System with a company that is ideal to operate its complex generation and transmission system and to introduce efficiency into the group of activities that make up the service of supplying electricity".[28]

6. The privatization of REE (1996–2005)

Once the cartel had been overcome and an operator of a public nature had been installed in the transmission market, it was clear that the real opponent was now the European guidelines opposed to a public company controlling the transmission business. For Brussels this job should be in the hands of the market, in the hands of private businesses which had to follow the criteria of business profitability. Consequently, the Spanish authorities knew that privatization was inevitable in the short term.

The political change in the government accelerated this process. The Popular Party won the elections in March 1996. In December the new government signed a protocol with the electricity companies with the object of repealing the LOSEN and fitting in with the European Directives.[29] The Law 54/1997 of the electricity sector (LSE), of November, and its later development regulation,[30] started the wheels of privatization. This implied two things for the REE: first it would lose its role as coordinator and regulator of the energy contributions of the generators. This role was passed to a new company which was in charge area of marketing – the Operating Company of the Spanish Electricity Market (OMEL)[31] – whose aim was to facilitate the agents' negotiation of their supply

[22] The guidelines set out at the end of October by the Minister for Industry to the chairman of UNESA led, under the unquestionable principle of the separation of generation and distribution, to the following model: three generating companies, which would sell their electricity through the REE to 8–10 distributors at a regulated price; the entry of Endesa into distribution; and the formation of a management company for nuclear energy. Noceda [18].

[23] Garrido and Herrero [19, p. 698].

[24] According to Ariño and López de Castro [16, p. 361], the desire was to eliminate the criticisms over the unbalanced shareholder structure, which could end in favourable treatment for Endesa.

[25] Ariño and López de Castro [16, p. 326].

[26] Red Electrica de España. Annual Report (1994, p. 11).

[27] In this date there was 5600 km of fibre optics, 350,000 km of telephone circuits, automated control, and automated protection and management, and also an extensive system of wavelength carriers (in high and low frequency) for the transmission of data.

[28] Red Electrica de España. Annual Report (1995, p. 11).

[29] Directive 96/92/CE on the internal electricity market.

[30] Procedure for liquidation of the Transmission and Operating system (RD 2017/1997); Regulation of the responsibilities of the system Operator (RD 2019/1997); Regulation of the activities of transmission and distribution and the economic regime for transmission (RD 2819/1998).

[31] OMEL was the company put in charge of the matching of offers to sell and buy energy between generators, distributors, commercializes and qualified consumers. It was constituted in December 1997 and was privatized in July 1998.

and demand. The second was that REE should be privatized and be quoted on the stock exchange so that third parties could gain access to the business of managing the transmission grid.

The electricity companies recovered their capacity of management, but this did not mean a return to the power of the cartel, given that the market would judge its actions by way of the value of its shares, its financial structure and its efficiency at generating and distributing electricity.[32]

The new system was described by some as an authentic 'electricity revolution'.[33] Even the chairman of REE considered that the transformation had meant "a competitive market without precedent in our country, without references in the world",[34] but what it actually produced was an acceleration and deepening of the process which the previous government had initiated. In fact, that process had indicated the year 2000 to achieve privatization. The transformations were brought about without dismantling the structure of the REE. To fulfil its remit established by the LSE, the REE only had to modify its Social Statutes, in May 1998, with the idea of delimiting its new ownership (composition of shareholdings) and its social objective. From that moment had as its task to direct the activities related with transmission of electricity, the operation of the system and the management of the grid.

The process of privatization basically involved the state selling its shareholding (60% through the state holding company SEPI) on the stock exchange, while also obliging the old cartel companies (*Iberdrola*, *Endesa*, *Union* and *Hidrocantabrico*), who held the remaining shares, to reduce their shareholding. It went public in 1999. Its main asset was its key role in the functioning of the Spanish electricity system, to which was added the recent activity of managing systems in other countries, the work of international consultation, and the prospect of setting up a telecommunications operator, given that it had the second largest fibre optic network in the country. In July that year SEPI, acting as a privatizing agent made an offer of a public issue of shares of 31.5% of the capital of REE, which turned it into a private company, quoted on the stock exchange.

The quoting of REE on the financial markets re-orientated its strategy to maintain a balance between its obvious market power in the Spanish network and the freedom of access to other operators (Fig. 1). Excessive opening or an abuse of their dominant position would have a very different reading among its shareholders. A position of near monopoly should then correspond to a greater economic efficiency, a high rate of profits and investment (in R&D and installations) and a clear transfer to society of the benefits of advances in technology and management to maintain the quality of service (Fig. 2). All of this was reflected in the treatment it received from the state by way of participation in the profits from electricity tariffs (RD 1164/2001). This treatment allowed the REE to have a 'reward' above the opportunity cost of money as long as the company pursued continual reinvestment in R&D and improvement in its installed capacity to increase the quality of service.[35]

In relation to the development of the grid, REE took its first planning process up to the year 2011 (RD 1955/2000) and carried out coordinated studies with RTE (the French operator) for the development of the Spain–France interconnection as a new corridor of 400 kV in the eastern Pyrenees, the study of structural

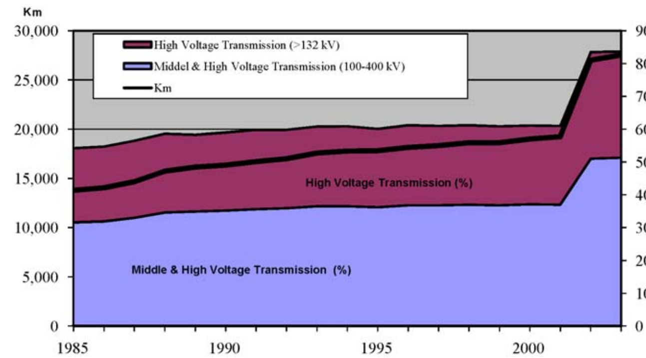


Fig. 1. Development of the transmission grid of Red Eléctrica (km) and its relative importance within the peninsular electricity network (1985–2003) (%). *Source*: Red Eléctrica and UNESA Annual Reports.

solutions to increase the connection with the rest of the European system, and analysis of the impact of the Tunisia–Libya interconnection on the stability of the Mediterranean ring. In contrast, as far as forecasting was concerned, the company analyzed the annual demand for electricity on the peninsular in the long term (2000–2010), with the help of SIPREDE (System for the Prediction of Electricity Demand) paying particular attention to the availability of thermal groups. In any case the increase in consumption started to exceed any forecasts or expectations. Excellence in the provision of service continued to be the main source of development, while diversification and the internationalizing of its activities did not really take off; in part because of the 'dot com' crisis, which started in 2001. However, entry into other markets, especially Latin America, turned out to be a clearer option, because it would permit REE to present itself as a global operator and not so much a quasi-monopolist of the Spanish market.

Taking all this into account, the danger represented by various European operators taking up positions outside their national markets, anticipating a single European market, lead the REE to reinforce its main material asset, the High Voltage Grid (Fig. 1). The acquisition of the transmission assets of *Endesa* and *Union Fenosa*, along with the shareholding in the company which controlled the assets which came from *Iberdrola*, meant that REE was proprietor of 84% of the Spanish high voltage transmission grid, and once they had exercised the option to buy the *Iberdrola* grid, the only operating company in Spain, in accordance with the model of TSO (Transmission System Operators) which was being imposed as the main option in European recommendations.

The process of privatization reduced the shareholding strength of the cartel companies. In 2002 the maximum holding of members of the public and legal entities was limited to 3% (Law 53/2000, on financial, administrative and social order measures), which increased the free capital in circulation (*free float*). All of this created a great interest in the capital markets. In effect, the placing of the shares, after research into the demand (*accelerated book-building*) by the electrical companies, was carried out in a very successful way, as proved by the fact that there was almost eight times as much demand as supply. This was shown by a favourable behaviour in the markets (Fig. 3).[36]

For its part, the strategy of permanent internal improvement and investment in R&D continued results and the quality of service provided. In this way the transmission grid, in which since 1999 there had been a notable level of investment, ended 2003 with a new annual record (more than 215 million euros) (Fig. 2). The revision of the planning of the transmission grid (which started from the basis

[32] Garrido and Herrero [19, p. 711].
[33] Anes et al. [20, p. 220].
[34] Red Electrica de España. Annual Report (1997, p. 4). The words of Mielgo, Chairman of REE.
[35] The shares performance was very satisfactory in 2000, above all once the markets understood the possibilities for development, solidity, and profitability of the Company. Without doubt various factors contributed to this: having turned itself into a company of world renown, thanks to its management ability and its efficiency in operating the system; the possible creation of the Iberian electricity market with Portugal; its share price on the IBEX-35, and its excellent credit rating (Moody's 'Aa3' and Standard & Poor's 'AA-/A-1+'.
[36] The total profitability for the shareholder from the time the company went public in July 1999 until 27 February 2004 was 95%, which placed Red Eléctrica amongst the most profitable share offers in this period.

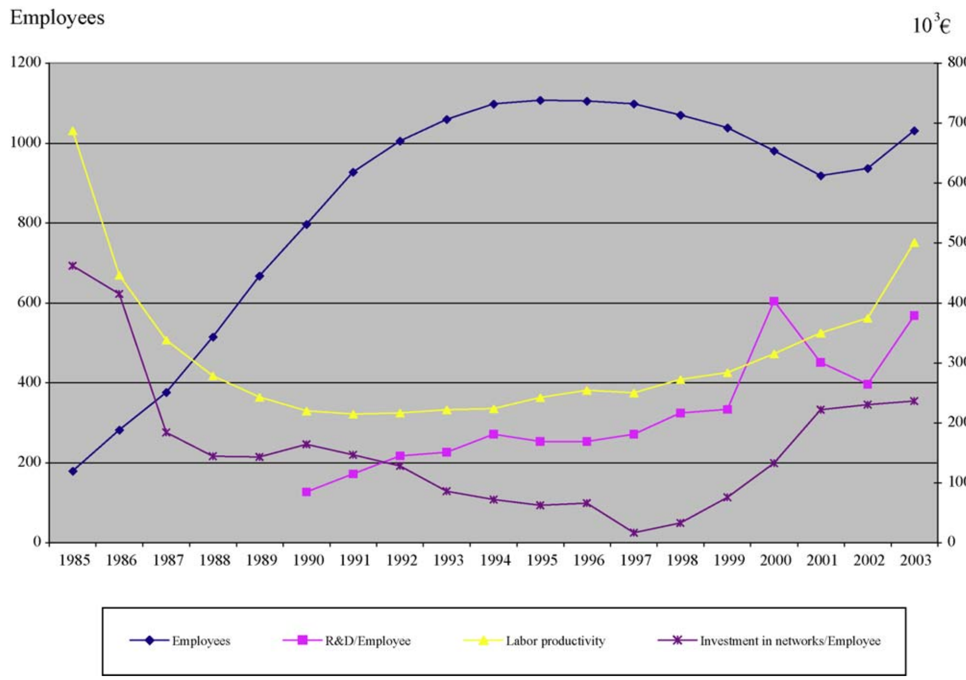


Fig. 2. Development of employment, R&D, productivity and investment in Red Eléctrica (1985–2003). *Source*: Red Eléctrica and UNESA Annual Reports. Data in thousands of euros, without counting the acquisitions of assets. *Note*: The workforce is part of the mother company, consequently, it does not include the staff of the subsidiaries. The R&D has been calculated from the cost of training the staff of RE. The work productivity is obtained from Value Added/employee. The investment in network includes lines and substations.

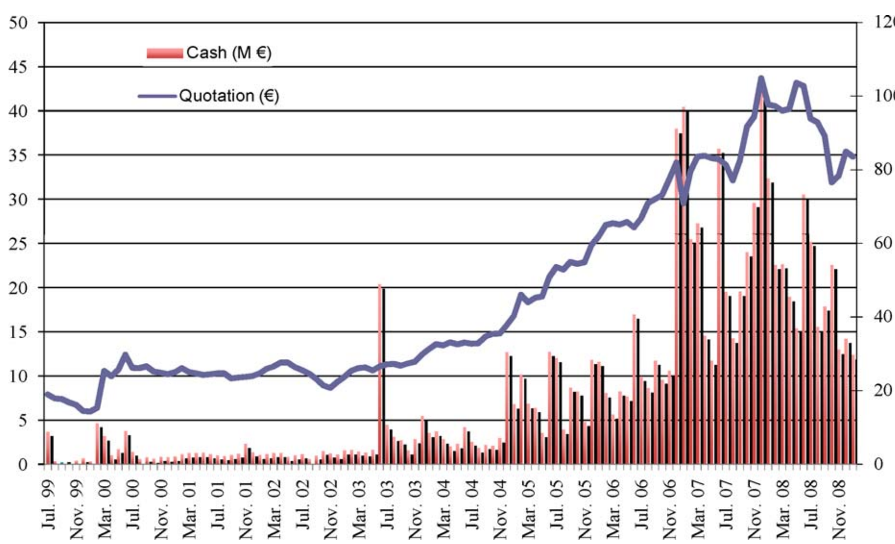


Fig. 3. Share price for Red Eléctrica on the stock market. July 1999–January 2009 (monthly average). *Source*: Stock Market of Madrid.

of the document 'Planning the electricity and gas sectors. Development of transmission grids 2002–2011', published by the Ministry of Economy in October 2002) meant the adoption of a new multi-scenario methodology, as opposed to the 'worst possible case' which covered all adverse circumstances. Lastly, the operation of the system, besides increasing its earnings significantly, offered a very satisfactory answer, much better than in other developed countries, in part because of the strong growth in consumption in the Spanish market which was growing at 6% annually.

While witnessing the success of the TSO model in Spain, it was also gaining ground in Europe. The victory of the Socialist Party in 2004 came while the government could still name the Chairman of REE and direct the company towards playing a leading role in what was predicted to become a type of European electricity market along the guidelines of the TSO model. But all of these plans were put on hold with the rejection of the proposed European Constitution by France in May 2005. Will REE know how to take advantage of this new halt in the process of constructing the European electricity market?

7. Conclusions

REE has never had a fixed design, not even at its formation did it start from zero. This public company could count on the experience that the Repartidor Central de Cargas (RECA) and, later, Aseléctrica had accumulated over more than forty years under the 'direct or delegated' management of the cartel (UNESA) and the collusion of a weak state.

The desire for change of the first Socialist government (1982) came to fruition with the nationalization of the High Voltage Grid. This strategic act, in agreement with a reformist political transition, had two aims. The first, it implied a serious attempt to submit the oligarchic business interests of the old regime to the new democratic system. The second was the desire to introduce a certain economic rationality and social normalization within an oversized sector at a time of energy crisis, incorporating the viewpoint of citizens in the process of decision-making.

This strongly interventionist policy of the Socialist Party government, in addition to the specific economic results produced, also managed to bring the cartel under control of the regulating power of the government. Since then under different governments, all of their different actions in relation to the electricity industry have come from the 'forced or voluntary' consensus between the regulator and the ever weaker cartel under the formula of the so-called Electricity Protocols.

The administration having taken over the transmission control system continually improved the quality and quantity of its information, the key to surviving and adapting, until it was able to act with greater knowledge than the cartel in key areas: firstly, the needs and possibilities of the market, and secondly, its tariffs. The latter became the instrument of earnings – turning round the economic performance – of the companies, and as such the real 'negotiating weapon' and one form of management of the country's energy policy.

Consequently, nothing makes us think that the measures which explain the birth and early years of the REE have anything to do with the unbundling (generation, transmission, distribution and commercialization) that are present in the electricity models submitted to privatization and de-regulation, or vice versa, which take competition to be the ideal manner of reducing energy costs and for the functioning of markets, which were put into practice at the end of the 1980s and the beginning of the 1990s in different European and American countries.

The functional consolidation of the REE in the joint operation of the electricity system at the beginning of the 1990s would allow, thanks to the perfecting of the regulation systems, an easier transition for Spanish energy policy to the new orientation, and later to European directives. However, the important degree of uncertainty which hung over the future interior market in electricity and, as a consequence, the non-existence of a clearly defined energy policy, explains the shallowness and lack of pace in the reforms (LOSEN). In fact it was not until the directive over interior markets was confirmed, when the Popular Party government gave it a 'neo-liberal' orientation to electricity industry, with the LSE. This policy led to the privatization and the increase in independence in the management of the grid in such a way that the institution created to strengthen the regulation of the market became the main instrument for formulating its deregulation.

We do not know if the REE will know how to take advantage of the new situation to develop institutionally towards a model that is capable of being competitive in the coming European scenario. We do not have sufficient historical perspective. What is true is that the history of the REE is surprising in its versatility. Consequently it is possible to be optimistic from the free marketeers' point of view and by making a linear interpretation of the institution explain the history of the REE from the present situation as that of a pioneer of the TSO model. But, for the historian there are no linear explanations and the key point is what has the versatility of this institution been due to in the long term? Its versatility, its adaptability is what would explain why it fits in well to situations, but what is it that allows it to adapt? North when explaining the institutional changes that that make it possible for institutions and organizations to survive indicates the following: "Competition forces organizations to continually invest in skills and knowledge to survive. The kinds of skill and knowledge individuals and their organizations acquire will shape evolving perceptions about opportunities and hence choices that will incrementally alter institutions". Later he also remarks: "the key to survival is improving the efficiency of the organization relative to that of rivals".[37] To manage to adapt the REE developed throughout its history its capacity to obtain better information than its competitors (the cartel). To obtain better information it needed a way of getting it and a way of carrying out its strategy or the capacity to impose its objectives. The instrument for gaining this information was central control (CECOEL), which in turn informed them how they should design their instruments of attack, which were the tariffs. Supporting these two elements was a third, which was control of part of the cartel by way of the public company Endesa and alliances with the private company Iberdrola. This was the game plan until 1996 but, in 2 years of the new Popular Party government the situation had been modified, although not substantially altered as the participants would have us believe. The privatization of Endesa and that of the REE immediately after appeared to leave the Executive without any means of control. But this was not true, the connection between the company chairmen and the government was strong, although it would weaken with time as the private shareholders gained strength. In addition the new REE had been converted into an even more efficient instrument of regulation, because on privatization it was carrying out the essential functions of control and information, but unloaded the business of commercialization. Consequently it had reduced transaction costs and was a more efficient tool because it was better accepted by the market. The Socialist Party on returning to power in 2004, found an instrument of regulation that was the minimum expression of what a TSO could be, but it lacked a generating company such as Endesa, so it went looking for an alliance with a member of the cartel that would restore its power in the national electricity market. It needed a company that was close to the political power, which could take over the now privatized and unruly Endesa. The company chosen was Gas Natural, connected to political power in Catalunya, where since the beginning of democracy there had been the desire to create a large business group which would control the natural gas market in the Mediterranean to ensure the economic growth of Catalunya. The by now traditional ally Iberdrola joined the takeover operation as a support company. The day these alliances were made official was the last meeting of UNESA (September 2005); the old cartel was smashed to pieces.

This is as far as we can go in our explanation of the history of the REE against the cartel. At present the history now is a European history, in which all the players are concealing their weapons whilst faced with the indecisiveness caused by the No to the European Constitution. It is true that the European authorities did not see the potential merger of Gas Natural and Endesa as being against freedom of competition, but it has been a clear sign for other large European companies which have seen in the Spanish market the opportunity to consolidate their macro-alliances prior to the unification which will take place in the European electricity market.

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